SUPPLEMENTAL MATERIAL

Data S1.

Supplemental Methods

Cardiac magnetic resonance imaging

The LV mass was adjusted for body size by dividing 100 × LV mass by the predicted LV mass based on height, weight, and sex, as: 100 × LV mass/(a × height$^{0.54}$ × weight$^{0.61}$), where a = 6.82 for women and 8.25 = men with mass in grams, height in meters, weight in kilograms. Similarly, the body size-adjusted LV volume was computed as: 100 × LV × volume/(b × height$^{1.25}$ × weight$^{0.43}$), where b = 10.0 for women and 10.5 for men and LV volume is in milliliters.

Cine images were obtained with a temporal resolution of approximately 50 ms or less using a segmented k-space and an ECG gated, fast spoiled gradient-recalled echo (FGRE) pulse sequence during MESA examination 1 at Year-0. On the other hand, ECG gated long- and short-axis cine images were acquired using a steady-state free precession (SSFP) sequence at MESA examination 5 at Year-10. Reader and pulse sequence calibration equations were algebraically combined to obtain overall equations[1, 2]. All calibration curves were found to be linear and were fitted with ordinary regression methods. This equation was used to correct Year-0 readings to be comparable to Year-10 readings.

For the identification of a regional scar, the LGE images were manually analyzed offline. The myocardial scar area was manually defined as the area with increased signal intensity by using a full-width at half-maximum criterion[3] and was quantified as a percentage of LV mass by using QMass. An ischemic pattern scar was defined as a myocardial scar that involved the subendocardium in a coronary artery distribution. A non-ischemic pattern scar was defined as a myocardial scar that predominantly affected the midwall or subepicardium without subendocardial involvement in a non–coronary artery distribution.

Table S1. Differences in baseline characteristics among ECG strain/LVH groups

	ECG strain (-)		ECG strain (+)		
	ECG-LVH (-) (n = 5,932)	ECG-LVH (+) (n = 341)	ECG-LVH (-) (n = 111)	ECG-LVH (+) (n = 57)	p Value
Demographic characteristics					
Age (years)	61.5 ± 10.2	64.4 ± 9.6	67.5 ± 8.6	69.0 ± 9.2	0.047
Sex women, n (%)	3,192 (54)	190 (56)	55 (50)	31 (54)	0.999
Ethnicity, n (%)					0.002
White	2,314 (39)	72 (21)	36 (32)	10 (18)	
Chinese	712 (12)	55 (16)	9 (8)	7 (12)	
African	1,577 (27)	139 (41)	45 (41)	27 (47)	
Hispanic	1,329 (22)	75 (22)	21 (19)	13 (23)	
Heart rate (beats/min)	63 ± 10	62 ± 10	63 ± 10	62 ± 10	0.903
Body mass index (kg/m2)	28.2 ± 5.5	29.1 ± 5.5	30.1 ± 5.3	28.4 ± 4.5	0.279
Systolic blood pressure (mmHg)	125 ± 21	139 ± 25	140 ± 24	150 ± 26	<0.001
Diastolic blood pressure (mmHg)	72 ± 10	75 ± 11	75 ± 12	78 ± 14	<0.001
Current smoker, n (%)	791 (13)	31 (9)	13 (12)	10 (18)	<0.001
Diabetes, n (%)	688 (12)	67 (20)	29 (26)	11 (19)	<0.001
Total cholesterol (mg/dl)	194 ± 36	196 ± 37	197 ± 40	196 ± 38	0.162
Estimated GFR (mL/min)	81 ± 18	84 ± 18	75 ± 20	74 ± 20	0.636
NT-proBNP (pg/mL) (n = 5,278)	57 (24, 113)	75 (31, 151)	147 (64, 306)	261 (84, 476)	<0.001
CMR measurements (n = 4,735)					
LV EDVi (ml/m^2)	69 ± 12	75 ± 15	71 ± 16	75 ± 17	<0.001
LV ESVi (ml/m^2)	26 ± 6	29 ± 9	27 ± 11	31 ± 15	<0.001
LV Mi (g/m^2)	64 ± 11	73 ± 14	73 ± 14	83 ± 18	<0.001
LV MVR (g/ml)	0.94 ± 0.18	0.99 ± 0.20	1.06 ± 0.23	1.13 ± 0.20	0.001
LV wall thickness ≥15mm	25 (0.6)	6 (2.5)	2 (3.1)	3 (6.7)	<0.001
LV wall thickness (mm)	9.2 ± 1.8	10.1 ± 2.0	10.5 ± 2.1	11.4 ± 2.2	0.002
LV EF (%)	63 ± 6	62 ± 7	63 ± 8	60 ± 11	<0.001

Table S2. ECG strain and adverse cardiovascular events in participants with ECG strain in only lead V5/V6

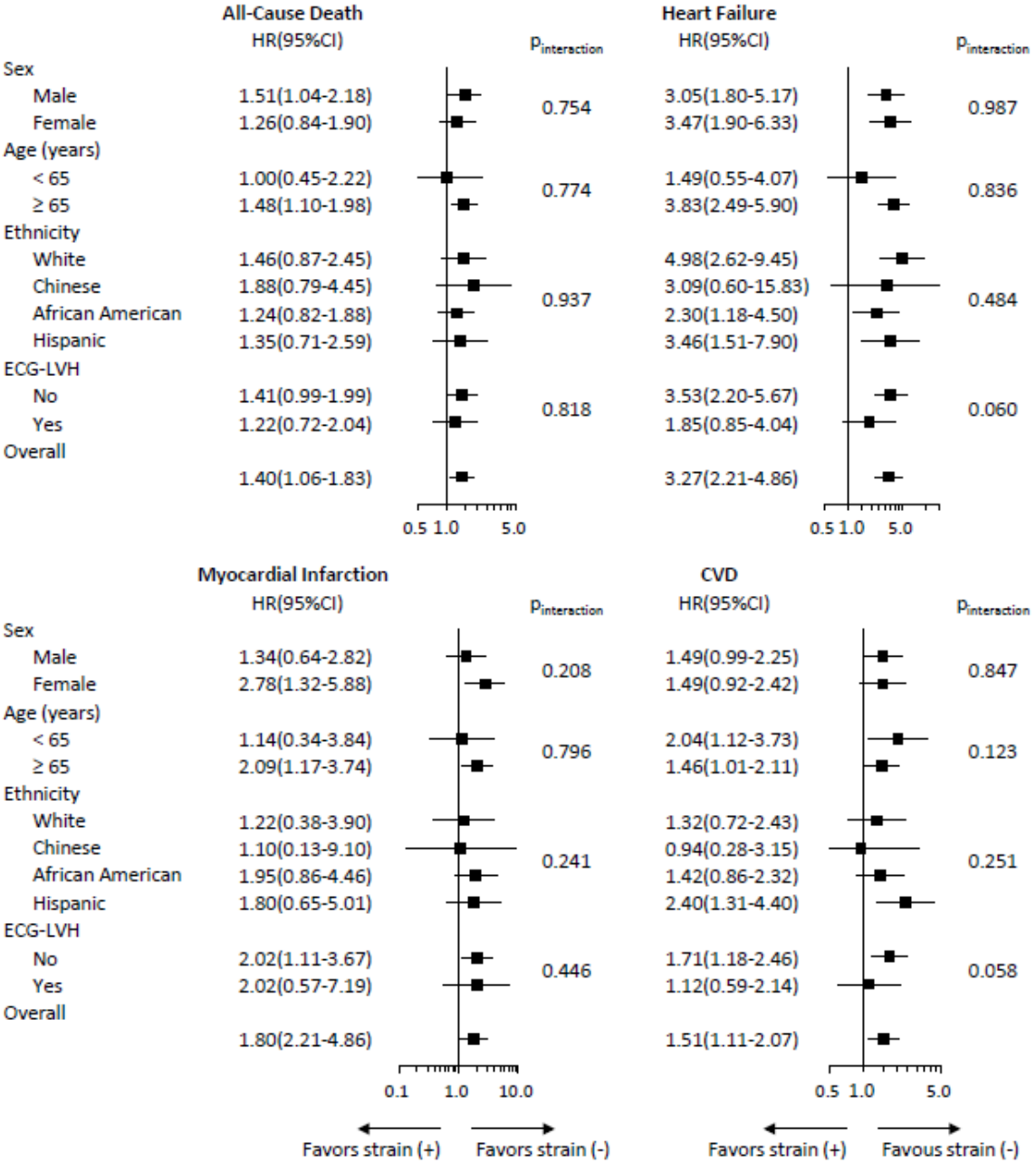
	Unadjusted				Model 1*				Model 2			
	No. of Events/No. at Risk	**Hazard Ratio**	**95%CI**	**P Value**	**No. of Events/No. at Risk**	**Hazard Ratio**	**95%CI**	**P Value**	**No. of Events/No. at Risk**	**Hazard Ratio**	**95%CI**	**P Value**
All Cause Mortality	1,045/6,437	2.46	1.77 - 3.42	**<0.001**	869/5,252	1.39	0.97 - 2.00	0.071	1,039/6,390	1.34	0.95 - 1.90	0.091
CHF	260/6,412	5.79	3.63 - 9.24	**<0.001**	201/5,234	3.17	1.79 - 5.62	**<0.001**	259/6,368	2.62	1.58 - 4.36	**<0.001**
CVD†	798/6,414	2.71	1.87 - 3.92	**<0.001**	653/5,235	1.80	1.19 - 2.73	**0.006**	793/6,369	1.56	1.06 - 2.32	**0.026**
CHD	532/6,414	2.73	1.75 - 4.27	**<0.001**	431/5,235	1.91	1.16 - 3.14	**0.011**	531/6,369	1.54	0.95 - 2.48	0.079
MI	252/6,413	3.16	1.73 - 5.78	**<0.001**	205/5,234	2.44	1.26 - 4.71	**0.008**	252/6,368	1.99	1.05 - 3.78	**0.034**
Angina	302/6,412	2.55	1.40 - 4.66	**0.002**	248/5,233	2.23	1.16 - 4.30	**0.016**	302/6,367	1.80	0.96 - 3.37	0.069
Stroke	243/6,412	1.78	0.79 - 4.01	0.163	206/5,233	0.80	0.29 - 2.18	0.666	240/6,367	0.99	0.43 - 2.28	0.982

*Model 1 was adjusted for demographics (age, sex and ethnicity), traditional risk factors (BMI, heart rate, systolic BP, smoking, diabetes, antihypertensive medication use, and eGFR), and NT-proBNP. Model 2 was adjusted for demographics, traditional risk factors, and ECG-LVH.

†CVD includes MI, resuscitated cardiac arrest, coronary heart disease death, stroke, and stroke death.

CHD = coronary heart disease; CI = confident interval; CVD = cardiovascular disease; eGFR = estimated glomerular filtration rate; HF = heart failure; HR = hazard ratio; MI = myocardial infarction.

Figure S1. Subgroup-Specific Adjusted Hazard Ratios for All-Cause Death, Heart Failure, Myocardial Infarction, and the Composite Cardiovascular Disease (CVD) in the ECG Strain (+) and ECG Strain (-) Groups.



The forest plot summarizes multivariable-adjusted HRs with 95% CI. Models were adjusted for sex (if not stratified by sex), age (if not stratified by age), ethnicity (if not stratified by ethnicity), BMI, heart rate, systolic BP, smoking, diabetes, antihypertensive medication use, and eGFR. There was no evidence for interaction. BMI = body mass index; BP = blood pressure; CI = confident interval; eGFR = estimated glomerular filtration rate; HR = hazard ratio; LVH = left ventricular hypertrophy.

Supplemental References:

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